



PATENT
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE BEFORE THE
BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: Lee, et al.

Serial No.: 09/672,204

Confirmation No.: 8791

Filed: September 28, 2000

For: METHOD AND APPARATUS FOR
SONET/SDH RING LOAD BALANCING

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

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Group Art Unit: 2157

Examiner: Ramy M. Osman

CERTIFICATE OF MAILING 37 CFR 1.8	
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APPEAL BRIEF

Appellant submits this Appeal Brief to the Board of Patent Appeals and Interferences on appeal from the decision of the Examiner of Group Art Unit 2157 dated April 20, 2004, finally rejecting claims 1-23. This Appeal Brief accompanies Appellant's request for a one (1) month Extension of Time under 37 CFR 1.136(a)(3) and in accordance with 37 CFR 1.192(a). Please charge the fee for filing this Appeal Brief and any extensions of time to Deposit Account No. 20-0782.

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Real Party in Interest

The real party in interest is Lucent Technologies, Inc.

Related Appeals and Interferences

Appellant asserts that no other appeals or interferences are known to the Appellant, the Appellant's legal representative, or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

Status of Claims

Claims 1-23 were originally presented in the application. Claims 1-3, 7-10, and 12-23 stand finally rejected as being anticipated by Morley et al. (CCBR, Optimal Loading of SONET BLSRs), claims 4 and 5 stand finally rejected by Morley in view of Wan et al. (IEEE, Load Balancing in Counter Rotated Sonet Rings) and claims 6 and 11 stand finally rejected by Morley in view of Budka (U.S. Patent No. 6,014,567) as discussed below. The rejection of claims 1-23 based on the cited references is appealed. The pending claims are shown in the attached Appendix.

Status of Amendments

A first response was filed on February 04, 2004 to overcome a First Office Action dated December 19, 2003 (Paper No. 1). In the First Office Action, the Examiner rejected claims 1-23 under 35 U.S.C. § 112, rejected claims 1-3, 7-10 and 12-23 under 35 U.S.C. § 102(b) and rejected claims 4-6 and 11 under 35 U.S.C. § 103(a). In the response filed on February 04, 2004, the Appellant amended claims 1-2 and 12-16 and set forth arguments traversing the rejections issued by the Examiner.

A second response was filed on May 27, 2004 in response to a Second (Final) Office Action dated April 20, 2004. In the Final Office Action, the Examiner noted that claims 1-23 were pending in the application and the Examiner reiterated his rejection of claims 1-3, 7-10 and 12-23 under 35 U.S.C. § 102(b) and claims 4-6 and 11 under 35 U.S.C. § 103(a) as recited in the First Office Action. In the response filed on May 27, 2004, the Appellant made no amendments to the claims but again set forth arguments traversing the rejections issued by the Examiner.

The Examiner responded to the Appellant's response of May 27, 2004 with an Advisory Action dated July 23, 2004. In the Advisory Action, the Examiner cited that the Appellant's response to the Final Office Action did not place the Appellant's application in condition for allowance. More specifically, the Advisory Action reiterated the Examiner's rejections of the Appellant's claims enumerated in the Final Office Action. The claims on appeal are those of the Final Office Action response filed May 27, 2004.

Summary of Invention

The invention of the Appellant comprises at least a method and apparatus for balancing facility loading levels and/or link loading levels within a SONET ring and avoid, where possible, the over utilization of bandwidth for any individual facility between SONET nodes such that a threshold value will not be exceeded. The invention advantageously provides the efficient use of bandwidth for a SONET ring by opportunistically utilizing unused capacity on the SONET ring.

A method according to the invention of the Appellant includes determining a first circuit path between a source node and a destination node in a Synchronous Optical Network (SONET) ring comprising a plurality of nodes interconnected by links, each of the links having associated with it a plurality of facilities, each of the facilities having associated with it a respective bandwidth utilization level, wherein facilities having bandwidth utilization levels exceeding a first threshold level are not used to define the first circuit path.

More specifically, the Appellant's invention includes a method and apparatus for providing a load balanced circuit path between a source node and a destination node by iteratively selecting facilities within a link that have bandwidth utilization levels that are below a threshold level. In various embodiments of the Appellant's invention, an alternate path is selected where facilities in a path meeting the threshold level can not be found. Alternatively, a threshold level is adjusted incrementally if facilities and/or links within a first path and/or alternate path do not meet the threshold requirements.

As suggested in MPEP 1206, Appellant now reads two of the broadest appealed claims, specifically claim 1 and claim 21, on the specification and on the drawings. It should be understood, however, that the appealed claims may read on other portions of the specification or other figures that are not listed below.

Firstly, and with reference to FIG. 1 of the Appellant's specification, in one embodiment, a communications system 100 of FIG.1 comprises a network manager 110, a SONET element management system (EMS) or controller 120, a communications network 130, a database 150 and a plurality of work stations 160₁ through 160_n (collectively work stations 160) . The communications network 130 comprises a plurality of network elements NE₁ through NE_N (collectively network

elements NE), including a SONET ring 140 and other network elements (not shown). SONET ring 140 comprises, illustratively, four add-drop multiplexers (ADMs) denoted as ADMs 142, 144, 146 and 148.

In further reference to FIG. 1, the Appellant teaches that the database 150 is operatively coupled to the element manager 120 via a path M2. Database 150 may comprise a standard mass storage device, such as a redundant array of inexpensive devices (RAID) or other known mass storage device cooperating with a data base program such as the Oracle data base provided by Oracle Corporation of Redwood Shores, California. All that is necessary is that the database 150 be able to communicate with the element manager 120 in a manner facilitating the storage and retrieval of information, such as characterization and control information pertaining to the SONET ring 140 including loading information regarding the various links interconnecting the nodes in the network. In one embodiment of the invention, the database 150 stores information pertaining to each node within the SONET ring 140 and, more particularly, to the type of links connecting the nodes, the type of channels provided by these links and the loading or bandwidth utilization of the respective links and/or channels. The database 150 also stores information pertaining to the availability of facilities for the various links and/or channels used to communicate between nodes.

The element manager 120 and database 150 of the communications system 100 of FIG. 1 are depicted as separate functional entities. However, it will be appreciated by those skilled in the art that the element manager 120 and database 150 may be combined within a single functional entity. Thus, the element manager 120 and database 150 may be operably combined to form a network management apparatus suitable for managing the SONET ring 140 according to the present invention.

The SONET element management system 120 comprises, illustratively, an Integrated Transport Management SONET Network Controller (ITM-SNC) manufactured by Lucent Technologies, Inc. of Murray Hill, New Jersey. The SONET element management system 120 manages all independent SONET network elements, such as Add-Drop Multiplexers (ADMs) within the communications network 130 of FIG. 1. The SONET EMS 120 implements the element management layer of the TMN standard as it applies to SONET network elements. The SONET EMS 120 is coupled to each of the

SONET network elements to be managed via a data communications network (DCN) illustratively a Public Switched Packet Data Network (PSPDN) utilizing the X.25 layered packet transmissions protocol. The SONET EMS 120 communicates, via the DCN, with at least one ADM within the SONET network 140 of the communications network 130 of FIG.1. That is, one ADM within the SONET ring 140 operates as a Gateway Network Element (ONE) that is coupled to the SONET EMS 120 via the DCN. In one embodiment, the SONET embedded Data Communications Channel (DCC) is used for SONET ADM communications within a ring. In this manner, each of the network elements within a SONET ring is managed by the SONET EMS 120 in substantially a standard manner.

The Appellant further recites that the network manager 110 implements the network management layer of the TNN standard, while the SONET EMS 120 implements the element management layer of the TMN standard.

With reference to FIG. 3, the Appellant teaches a method implemented by the element manager 120 where the element manager determines a first circuit path between a source node and a destination node in a Synchronous Optical Network (SONET) ring comprising a plurality of nodes interconnected by links, each of the links having associated with it a plurality of facilities, each of the facilities having associated with it a respective bandwidth utilization level, wherein the facilities having bandwidth utilization levels exceeding a first threshold level are not used to define the first circuit path. The method of FIG. 3 further teaches that a second circuit path in the opposing direction to the first circuit path is selected when facilities in the first circuit path having bandwidth utilization levels below a first threshold level can not be found. Even further, the method of FIG. 3 teaches adjusting the threshold level where the bandwidth utilization levels of facilities in the second path exceed the first threshold level.

For the convenience of the Board of Patent Appeals and Interferences, Appellants' independent claims 1, 7, 12, 17 and 21 are presented below in claim format with elements read on FIG. 1 and FIG. 3 of the drawings and appropriate citations to at least one portion of the specification for each element of the appealed claims (with reference numerals added). In addition, dependent claims 2 and 3 are presented below in claim format with elements read on FIG. 1 and FIG. 3 of the drawings and appropriate

citations to at least one portion of the specification for each element of the appealed claims (with reference numerals added). The Appellant submits that claims 8 and 9, 13 and 15, 18 and 19 and 22 and 23 respectively claim similar limitations and claims 2 and 3 and as such support for those claims are found in the same portions of the Appellant's Specification as claims 2 and 3 and as such are not presented below:

Claim 1 positively recites (with reference numerals added, where applicable):

1. A method, comprising the steps of:
determining a first circuit path between a source node and a destination node (308) in a Synchronous Optical Network (SONET) ring comprising a plurality of nodes interconnected by links, each of said links having associated with it a plurality of facilities, each of said facilities having associated with it a respective bandwidth utilization level (304), wherein said facilities having bandwidth utilization levels exceeding a first threshold level (306) are not used to define said first circuit path (314, 316, 320). (See Appellant's specification, page 9, line 15 through page 10, line 33).

Claim 2 positively recites (with reference numerals added, where applicable):

2. The method of claim 1, further comprising the step of:
in a Bi-directional Line Switched Ring (BLSR), selecting a second circuit path in the opposing direction to said first circuit path when facilities in said first circuit path having bandwidth utilization levels below a first threshold level can not be found (323, 324, 330). (See Appellant's specification, page 11, lines 1-14).

Claim 3 positively recites (with reference numerals added, where applicable):

3. The method of claim 1, further comprising the step of:
adjusting said threshold level where the bandwidth utilization levels of facilities in said second path exceed said first threshold level (326). (See Appellant's specification, page 11, lines 15-22).

Claim 7 positively recites (with reference numerals added, where applicable):

7. A method, comprising the steps of:
selecting a path between a source node and a destination node (308),
said path comprising at least two intervening nodes coupled by at least one

respective link, where said at least one link has associated with it respective facilities;

selecting one of said facilities within each of said at least one link for placing service on (308); and

determining whether a respective bandwidth utilization level for each selected facility within said circuit path is below a first threshold level (312, 314). (See Appellant's specification, page 9, line 15 through page 10, line 33).

Claim 12 positively recites (with reference numerals added, where applicable):

12. A method, comprising:

(a) selecting a first path between a source node and a destination node, said first path having at least one link (308);

(b) selecting a facility within each of said at least one link connecting the source node to the destination node (308);

(c) determining the bandwidth utilization level for each selected facility within each of said at least one link (312);

(d) rejecting said selected facility in the case of said respective bandwidth utilization level being above a threshold level (320); and

(e) repeating steps (b) through (d) until a circuit path between said starting node and destination node has been determined which meets said threshold level. (See Appellant's specification, page 9, line 15 through page 10, line 33).

Claim 17 positively recites (with reference numerals added, where applicable):

17. A computer readable medium storing a software program that, when executed by a computer, causes the computer to perform a method comprising the step of:

determining a first circuit path between a source node and a destination node (308) in a Synchronous Optical Network (SONET) ring (100) comprising a plurality of nodes (ADMs) interconnected by links (A-H), where each of said links has associated with it a plurality of facilities and each one of said plurality of facilities has associated with it a respective bandwidth utilization level (304), said facilities having bandwidth utilization levels exceeding a first threshold level (306) are not used to define said first circuit path (314, 316, 320). (See Appellant's specification, page 9, line 15 through page 10, line 33).

Claim 21 positively recites (with reference numerals added, where applicable):

21. Apparatus, comprising:

an element manager (120), for determining a balanced circuit path between a source node (ADM_n) and a destination node (ADM_n) within a

Synchronous Optical Network (SONET) ring (100) comprising a plurality of nodes (ADMs); and

a data base (150), for storing a respective bandwidth utilization level for each of a plurality of facilities within links (A-H) interconnecting said nodes (ADMs);

said element manager (120) determining whether said balanced circuit path is balanced by determining whether one of said plurality of facilities for each of said links (A-H) interconnecting said nodes (ADMs) has associated with it a bandwidth utilization level exceeding a threshold level, and iteratively selecting another facility within any of said links (A-H) where the bandwidth utilization level of a previously selected facility has exceeded a threshold level. (See Appellant's specification, page 3, lines 10-21; page 4, lines 5-24; and page 9, line 15 through page 10, line 33).

ISSUES

1. Whether claims 1-3, 7-10, and 12-23 are Patentable under 35 U.S.C. §102(b) over Morley et al. (CCBR, Optimal Loading of SONET BLSRs, hereinafter “Morley”).
2. Whether claims 4 and 5 are Patentable under 35 U.S.C. §103(a) over Morley in view of Wan et al. (IEEE, Load Balancing in Counter Rotated Sonet Rings, hereinafter “Wan”).
3. Whether claims 6 and 11 are Patentable under 35 U.S.C. §103(a) over Morley in view of Budka (U.S. Patent No. 6,014,567).

Grouping of Claims

Pending claims 1-3, 7-10 and 12-23; 4 and 5; and 6 and 11 have been grouped together by the Examiner in their rejection. Appellant urges that each of the rejected claims stands on its own recitation, the claims being considered to be separately patentable for the reasons set forth in more detail *infra*.

ARGUMENT

I. THE EXAMINER ERRED IN REJECTING CLAIMS 1-3, 7-10 AND 12-23 UNDER 35 U.S.C. § 102(b) BECAUSE THE CITED REFERENCE FAILS TO TEACH, SHOW OR SUGGEST AT LEAST DETERMINING A FIRST CIRCUIT PATH BETWEEN A SOURCE NODE AND A DESTINATION NODE COMPRISING LINKS, EACH OF THE LINKS COMPRISING AT LEAST ONE FACILITY, WHEREIN FACILITIES HAVING A RESPECTIVE BANDWIDTH UTILIZATION LEVEL ABOVE A FIRST THRESHOLD LEVEL ARE NOT USED TO DEFINE THE FIRST CIRCUIT PATH.

A. 35 U.S.C. § 102 - Claim 1.

The Examiner rejected claim 1 in the Final Office Action dated April 20, 2004 as being anticipated by Morley et al. (CCBR, Optimal Loading of SONET BLSRs, hereinafter "Morley"). The rejection is respectfully traversed.

The Examiner alleges that with respect to claims 1, 7, 12, 17 and 21, Morley teaches a method comprising all of the limitations of the Appellant's claims. More specifically, the Examiner alleges that Morley discloses determining a first circuit path between a source node and a destination node on a SONET ring comprising a plurality of nodes interconnected by spans where each span has a line capacity c , and if the total load on any span exceeds c , then that path and direction is not used. The Appellant respectfully disagrees.

"Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim" (Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co., 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1983)) (emphasis added).

The Appellant respectfully submits that Morley fails to teach, suggest or disclose each and every element of the claimed invention, arranged as in the claims of the Appellant. Specifically, the Appellant submits that Morley fails to teach, suggest or disclose each and every element of at least the Appellant's claim 1, which specifically recites:

“A method, comprising the steps of:
determining a first circuit path between a source node and a destination node in a Synchronous Optical Network (SONET) ring comprising a plurality of nodes interconnected by links, **each of said links having associated with it a plurality of facilities, each of said facilities having associated with it a respective bandwidth utilization level, wherein said facilities having bandwidth utilization levels exceeding a first threshold level are not used to define said first circuit path.**” (emphasis added).

The Appellant's invention of at least claim 1 is directed, at least in part, to a method for SONET/SDH ring load balancing where a circuit path between a source node and a destination node is determined, where the circuit path comprises a plurality of links interconnecting nodes, each of the links having a plurality of facilities. In the invention of the Appellant, each of the facilities of the interconnecting links has a respective bandwidth utilization level associated with it and any of the facilities of the interconnecting links having a bandwidth utilization level exceeding a user determined threshold level are not used to define the circuit path between the source node and the destination node.

In contrast to the Appellant's invention, there is absolutely no teaching, suggestion or disclosure in Morley for links comprising a plurality of facilities, or that each of the facilities has a respective bandwidth utilization level associated with it, or for a threshold level, where the facilities having bandwidth utilization levels exceeding the threshold level are not used to define a circuit path between a source node and a destination node as taught in the Appellant's Specification and claimed by at least the Appellant's claim 1. More specifically, in support of at least claim 1, the Appellant in the Specification specifically recites:

“The method 300 of FIG. 3 is entered at step 302 and proceeds to step 304, where a threshold level is selected. Each facility in a link has a user defined threshold. For example, the link connecting first ADM 142 to second ADM 144 can comprise a plurality of facilities. One such facility can be labeled facility “E1”, while another can be labeled “E2” and so on. Link E can, illustratively, be an OC3 and the threshold can be set, for example, at one, two or three DS-3s. The threshold will then be 33%, 67% or 100% respectively for the facilities comprising the link.” (See Specification, page 9, lines 15-24).

It is clear from at least the portion of the Appellant's specification presented above, that in the invention of the Appellant's, the facilities comprising a respective link are assigned a user defined threshold level (bandwidth utilization threshold) of a total bandwidth of a link. The utilization of bandwidth of a specific facility in a link used to complete a selected path is then checked against a preset threshold value and if the bandwidth utilization level of that facility exceeds the preset threshold, then the facility is not used to complete the selected path. In support of the above assertion, the Appellant in the Specification specifically recites:

"At step 312 a determination as to the loading of each link in the selected path is made. More specifically, the utilization of bandwidth of a facility in each of the links comprising the selected path is checked against the threshold value.

At step 314 a query is made as to whether the loading of the facility determined at step 312 is less than or equal to the threshold value such as 33%, 57% or 100% or some other value. If the query at step 314 is answered affirmatively, then the method 300 proceeds to step 316. If the query at step 314 is answered negatively, then the method 300 proceeds to step 320." (See Specification, page 10, lines 12-23).

In the invention of the Appellant, if the bandwidth utilization level of the specific facility in a link used to complete the selected path exceeds the set threshold, an alternate facility within that link is searched for to attempt to complete the selected path. In support of the above assertion, the Appellant in the Specification specifically recites:

"Assume that an OC-3 link is configured as three DS-3s or as a Synchronous Transport Signal Level One (STS-1) facility. That is each DS-3/STS-1 is configured for a threshold level, i.e. 50%. Specifically, each DS-3/STS-1 has a threshold of 14 DS-1s. Once the threshold is exceeded for the first DS-3/STS-1, a check is made to determine whether the other facilities within the link are below the threshold value. That is the second DS-3/STS-1 is checked to determine if its bandwidth utilization level is below 14 DS-1s. If the bandwidth of the second DS-3/STS-1 is below the threshold value, the second DS-3/STS-1 facility will be selected for the path. If the second facility is not below the threshold level, the search continues either for an alternate facility or an alternate path." (See Specification, page 11, line 30 through page 12, line 8).

Again it should be clear from at least the portions of the Appellant's Specification presented above that, in the invention of the Appellant at least with respect to claim 1, a circuit path between a source node and a destination node is determined. The links connecting the source node and the destination node are comprised of a plurality of facilities having respective bandwidth utilization thresholds. A respective bandwidth utilization level of each of the facilities of each of the interconnecting links is examined and facilities of links having a bandwidth utilization level exceeding a predetermined user set threshold are not used to define the interconnecting circuit path.

For example, if a first link in a circuit path between a source node and a destination node has three facilities and has a total bandwidth of, for example, 30 arbitrary units, each facility may be assigned one third of the total bandwidth, or 10 units. As such, if a first facility in the link is used to complete a previously selected path and is already supporting 5 arbitrary units, it has a bandwidth utilization level of 50% (5 out of a possible 10). If a predetermined first threshold value is set to 40% and a second circuit path needs to be completed from a source node to a destination node via this first link, then the first facility is not used to complete the second circuit path because the first facility has a bandwidth utilization level greater than the preset threshold value of 40%. If a second facility in the link is already only supporting 2 arbitrary units, it has a bandwidth utilization level of 20% (2 out of a possible 10). Because the threshold value is set to 40% and the second facility used to complete the selected path has a bandwidth utilization level less than the preset threshold value, the second facility may be used to complete the second requested circuit path via this first link.

As evident from the example presented above and the teachings of the Appellant's Specification, the Appellant's invention advantageously provides a method and apparatus for balancing facility loading levels and/or link loading levels within a SONET ring and avoid, where possible, the over utilization of bandwidth for any individual facility between SONET nodes such that a threshold value will not be exceeded. The facility loading levels are balanced by not using facilities having bandwidth utilization levels exceeding a predetermined threshold level to complete a circuit path, such that those facilities being underused are available for use in

completing a subsequent circuit path and those facilities being overused are not available for connection of a source node and a destination node. That is, because in the invention of the Appellant a bandwidth utilization level is determined for each facility and the bandwidth utilization level is compared with a threshold level, load balancing is able to be performed by the invention of the Appellant. More specifically, because in the invention of the Appellant the amount of a total bandwidth of each facility that is being used is determined and compared to a threshold value, load balancing between the facilities of a link and between links is able to be accomplished by the invention of the Appellant.

In contrast to the invention of the Appellant, Morley merely teaches, as pointed out by the Examiner, that in a bi-directional ring having a plurality of nodes interconnected by a same number of spans, each of the spans having a line capacity of "c", if the total load on any span exceeds "c" then that path and that direction is not used. However, there is absolutely no teaching, suggestion or disclosure in Morley for links comprising a plurality of facilities, or that each of the facilities has a respective bandwidth utilization level assigned to it, or for a threshold level, where the facilities having bandwidth utilization levels exceeding the threshold level are not used to define a circuit path between a source node and a destination node as taught and claimed by at least the Appellant's claim 1. That is, Morley does not teach, suggest or disclose and is unable to perform the load balancing of the Appellant's invention because Morley does not teach, suggest or disclose "each of said links having associated with it a plurality of facilities, each of said facilities having associated with it a respective bandwidth utilization level, wherein said facilities having bandwidth utilization levels exceeding a first threshold level are not used to define said first circuit path" as taught in the Appellant's Specification and claimed by at least the Appellant's claim 1.

A patentable difference between the invention of Morley and the Appellant's invention is easily determinable by referring back to the example presented above. Again, in the example presented above if a first link in a circuit path between a source node and a destination node has three facilities and has a total bandwidth of, for example, 30 arbitrary units, each facility may be assigned one third of the total bandwidth, or 10 units. As such, if a first facility in the link is used to complete a

previously selected path and is already supporting 5 arbitrary units, it has a bandwidth utilization level of 50% (5 out of a possible 10). In the invention of the Appellant, if a predetermined first threshold value is set to 40% and a second circuit path requiring the support of 2 arbitrary units to completed a circuit path from a source node to a destination node via this first link is requested, then the first facility is not used to complete the second circuit path because the first facility has a bandwidth utilization level greater than the preset threshold value of 40%. Again and as before, if a second facility in the link is already only supporting 2 arbitrary units, it has a bandwidth utilization level of 20% (2 out of a possible 10). Because the threshold value is set to 40% and the second facility used to complete the selected path has a bandwidth utilization level less than the preset threshold value, the second facility may be used to complete the second requested circuit path via this first link and is capable of supporting the 2 arbitrary units required to complete the second requested circuit path between a source node and a destination node. As seen from this example, the threshold value of 40% was used to balance the loads between the first facility and the second facility of this first link.

In contrast to the invention of the Appellant, however, the invention of Morley does not and can not perform balancing as taught in the Appellant's invention and claimed by at least claim 1 at least because Morley does not teach, suggest or disclose "each of said links having associated with it a plurality of facilities, each of said facilities having associated with it a respective bandwidth utilization level, wherein said facilities having bandwidth utilization levels exceeding a first threshold level are not used to define said first circuit path" as taught in the Appellant's Specification and claimed by at least the Appellant's claim 1. More specifically and referring to the example above, if a first link in a circuit path between a source node and a destination node has three facilities and has a total bandwidth of, for example, 30 arbitrary units, each facility may be assigned one third of the total bandwidth, or 10 units. As such, if a first facility in the link is used to complete a previously selected path and is already supporting 5 arbitrary units, it has a bandwidth utilization level of 50% (5 out of a possible 10). In the invention of the Morley there is no predetermined first threshold. As such if a second circuit path requiring the support of 2 arbitrary units to completed a circuit path from a source node

to a destination node via this first link is requested, then the first facility may be used to complete the second circuit path because the first facility is only using 5 out of 10 arbitrary units of bandwidth and can support the 2 additional units of bandwidth without exceeding capacity as required by Morley. In addition, the second facility may also be used to complete the second circuit path because the second facility is only using 2 out of 10 arbitrary units of bandwidth and can support the 2 additional units of bandwidth without exceeding capacity as required by Morley. As such, it is clear to see that Morley does not and can not perform the balancing of the Appellant's invention at least because Morley fails to teach, suggest or disclose "each of said links having associated with it a plurality of facilities, each of said facilities having associated with it a respective bandwidth utilization level, wherein said facilities having bandwidth utilization levels exceeding a first threshold level are not used to define said first circuit path" as taught in the Appellant's Specification and claimed by at least the Appellant's claim 1.

Even further, Morley does not teach, suggest or disclose that each link comprises a plurality of facilities that may be used to complete an interconnection as taught and claimed by the Appellant. More specifically, in the invention of the Appellants, a link comprises a plurality of facilities and any of the facilities of the links having a bandwidth utilization level below a threshold may be used to complete an interconnection. In contrast, in Morley, if the single span interconnecting two nodes does not have a capacity capable of accommodating a requested load, then an opposite direction ring must be used. As such, the Appellant respectfully submits that Morley fails to teach, suggest or disclose each and every element of the claimed invention, arranged as in the claims of the Appellant because Morley does not teach, suggest or disclose links comprising a plurality of facilities where any of the facilities of the links having a bandwidth utilization level below a threshold may be used to complete an interconnection.

Furthermore, there is absolutely no teaching, suggestion or disclosure in Morley for facilities having respective bandwidth utilization levels that are determined from respective bandwidth utilization threshold levels assigned to each of the facilities as taught in the Appellant's Specification and claimed by at least the Appellant's claim 1. Morley is totally silent regarding this claimed aspect of the Appellant's invention

specifically claimed by at least the Appellant's claim 1. For this reason as well, the Appellant respectfully submits that Morley fails to teach, suggest or disclose each and every element of the claimed invention, arranged as in the claims of the Appellant because Morley does not teach, suggest or disclose facilities having respective bandwidth utilization levels that are determined from respective bandwidth utilization threshold levels assigned to each of the facilities.

Even further, Morley does not teach, suggest or disclose "a first threshold level" as taught in the Appellant's specification and claimed by at least the Appellant's claim 1. That is, Morley does not teach, suggest or disclose a user, predetermined threshold determined to avoid, where possible, the over utilization of bandwidth for any individual facility between SONET nodes. Instead, Morley specifically recites:

"Because the ring is bi-directional, transport signals may be routed in either direction around the ring provided that the total load on any span does not exceed its line capacity c ." (See Morley, page 3).

And

"The objective function (1) is the sum of demands routed in either the clockwise ($X_k^+ = 1$) or the counter-clockwise ($X_k^- = 1$) direction (i.e., the total demand served by the ring). Constraint set (2) ensures that the sum of demands routed over each span (in both directions) does not exceed its line capacity." (See Morley, page 3).

For at least the reasons stated above, the Appellant respectfully submits that Morley absolutely fails to teach, suggest or disclose each and every element of at least the Appellant's claim 1 and as such does not anticipate at least the Appellant's claim 1. Therefore, the Appellant submits that independent claim 1 is not anticipated by the teachings of Morley and, as such, fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

B. 35 U.S.C. § 102 - Claim 2.

First, claim 2 depends directly from claim 1 and recites further limitations thereof. At least because Morley does not anticipate Appellant's invention as recited in Appellant's independent claim 1, the Appellant respectfully submits that dependent

claim 2 is also not anticipated and is allowable for at least the reasons stated above with respect to independent claim 1.

That is, and for at least the same reasons provided in Section A above, Morley fails to teach, suggest or disclose “each of said links having associated with it a plurality of facilities, each of said facilities having associated with it a respective bandwidth utilization level, wherein said facilities having bandwidth utilization levels exceeding a first threshold level are not used to define said first circuit path” as taught in the Appellant’s Specification and claimed by at least the Appellant’s claim 1. Thus, Morley also fails to anticipate Appellant’s invention as claimed in dependent claim 2, which depends directly from independent claim 1. Therefore, the Appellant submits that claim 2, as it now stands, fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

C. 35 U.S.C. § 102 - Claim 3.

First, claim 3 depends directly from claim 1 and recites further limitations thereof. At least because Morley does not anticipate Appellant’s invention as recited in Appellant’s independent claim 1, the Appellant respectfully submits that dependent claim 3 is also not anticipated and is allowable for at least the reasons stated above with respect to independent claim 1.

Even further, claim 3 recites the further limitation of “adjusting said threshold level where the bandwidth utilization levels of facilities in said second path exceed said first threshold level”. The Appellant respectfully submits that there is absolutely no teaching, suggestion or disclosure in Morley for “adjusting said threshold level where the bandwidth utilization levels of facilities in said second path exceed said first threshold level” as taught in the Appellant’s Specification and claimed by at least claim 3.

That is, and for at least the same reasons provided in Section A above, Morley fails to teach, suggest or disclose “each of said links having associated with it a plurality of facilities, each of said facilities having associated with it a respective bandwidth utilization level, wherein said facilities having bandwidth utilization levels exceeding a first threshold level are not used to define said first circuit path” as taught in the

Appellant's Specification and claimed by at least the Appellant's claim 1. Thus, Morley also fails to anticipate Appellant's invention as claimed in dependent claim 3, which depends directly from independent claim 1. In addition and as described above, Morley further fails to teach, suggest or disclose "adjusting said threshold level where the bandwidth utilization levels of facilities in said second path exceed said first threshold level" as specifically claimed by the Appellant's claim 3. Therefore, the Appellant submits that claim 3, as it now stands, fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

D. 35 U.S.C. § 102 - Claim 7.

Independent claim 7 is a method claim that recites limitations similar to those recited in independent claim 1. At least because Morley does not anticipate Appellant's invention as recited in Appellant's independent claim 1, the Appellant respectfully submits that independent method claim 7 is also not anticipated and is allowable for at least the reasons stated in Section A.

More specifically, claim 7 recites "determining whether a respective bandwidth utilization level for each selected facility within said circuit path is below a first threshold level." As such and for at least the reasons provided in Section A, the Appellant submits that Morley fails to anticipate the invention of the Appellant at least with respect to independent claim 7. Therefore, the Appellant submits that claim 7, as it now stands, fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

E. 35 U.S.C. § 102 - Claims 8-10.

First, claims 8-10 depend either directly or indirectly from independent claim 7 and recite further limitations thereof. At least because Morley does not anticipate Appellant's invention as recited in Appellant's independent claim 7, the Appellant respectfully submits that dependent claims 8-10 are also not anticipated and are allowable for at least the reasons stated above with respect to independent claim 7.

Even further, claim 9 recites the further limitation of "adjusting the first threshold level of said facilities within said at least one link responsive to a negative determination that said respective bandwidth utilization levels of facilities within an altered direction of

said circuit path exceed said first threshold level.” The Appellant respectfully submits that there is absolutely no teaching, suggestion or disclosure in Morley for “adjusting the first threshold level of said facilities within said at least one link responsive to a negative determination that said respective bandwidth utilization levels of facilities within an altered direction of said circuit path exceed said first threshold level” as taught in the Appellant’s Specification and claimed by at least claim 9.

That is, and for at least the same reasons provided in Section A above, Morley fails to teach, suggest or disclose “determining whether a respective bandwidth utilization level for each selected facility within said circuit path is below a first threshold level” as taught in the Appellant’s Specification and claimed by at least the Appellant’s claim 7. Thus, Morley also fails to anticipate Appellant’s invention as claimed in dependent claims 8-10, which depend either directly or indirectly from independent claim 7. In addition and as described above, Morley further fails to teach, suggest or disclose “adjusting the first threshold level of said facilities within said at least one link responsive to a negative determination that said respective bandwidth utilization levels of facilities within an altered direction of said circuit path exceed said first threshold level” as specifically claimed by the Appellant’s claim 9. Therefore and for at least the reasons recited above, the Appellant respectfully submits that claims 8-10, as they now stand, fully satisfy the requirements of 35 U.S.C. § 102 and are patentable thereunder.

F. 35 U.S.C. § 102 - Claim 12.

Independent claim 12 is a method claim that recites limitations similar to those recited in independent claims 1 and 7. At least because Morley does not anticipate Appellant’s invention as recited in Appellant’s independent claim 1 and claim 7, the Appellant respectfully submits that independent method claim 12 is also not anticipated and is allowable for at least the reasons stated in Section A.

More specifically, claim 12 recites “determining the bandwidth utilization level for each selected facility within each of said at least one link” and “rejecting said selected facility in the case of said respective bandwidth utilization level being above a threshold level”. As such and for at least the reasons provided in Section A, the Appellant submits that Morley fails to anticipate the invention of the Appellant at least with respect

to independent claim 12. Therefore, the Appellant submits that claim 12, as it now stands, fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

G. 35 U.S.C. § 102 - Claims 13-16.

First, claims 13-16 depend either directly or indirectly from independent claim 12 and recite further limitations thereof. At least because Morley does not anticipate Appellant's invention as recited in Appellant's independent claim 12, the Appellant respectfully submits that dependent claims 13-16 are also not anticipated and are allowable for at least the reasons stated above with respect to independent claim 12.

Even further, claim 15 recites the further limitation of "adjusting the threshold level incrementally." The Appellant respectfully submits that there is absolutely no teaching, suggestion or disclosure in Morley for "adjusting the threshold level incrementally" as taught in the Appellant's Specification and claimed by at least claim 15.

That is, and for at least the same reasons provided in Section A above, Morley fails to teach, suggest or disclose "determining the bandwidth utilization level for each selected facility within each of said at least one link" and "rejecting said selected facility in the case of said respective bandwidth utilization level being above a threshold level" as taught in the Appellant's Specification and claimed by at least the Appellant's claim 12. Thus, Morley also fails to anticipate Appellant's invention as claimed in dependent claims 13-16, which depend either directly or indirectly from independent claim 12. In addition and as described above, Morley further fails to teach, suggest or disclose "adjusting the threshold level incrementally" as specifically claimed by the Appellant's claim 15. Therefore and for at least the reasons recited above, the Appellant respectfully submits that claims 13-16, as they now stand, fully satisfy the requirements of 35 U.S.C. § 102 and are patentable thereunder.

H. 35 U.S.C. § 102 - Claim 17.

Independent claim 17 is a computer medium claim that recites limitations similar to those recited in independent claims 1, 7 and 12. At least because Morley does not anticipate Appellant's invention as recited in Appellant's independent claims 1 and 7 and

claim 12, the Appellant respectfully submits that independent method claim 17 is also not anticipated and is allowable for at least the reasons stated in Section A.

More specifically, claim 17 recites "each one of said plurality of facilities has associated with it a respective bandwidth utilization level, said facilities having bandwidth utilization levels exceeding a first threshold level are not used to define said first circuit path." As such and for at least the reasons provided in Section A, the Appellant submits that Morley fails to anticipate the invention of the Appellant at least with respect to independent claim 17. Therefore, the Appellant submits that claim 17, as it now stands, fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

J. 35 U.S.C. § 102 - Claims 18-20

First, claims 18-20 depend either directly or indirectly from independent claim 17 and recite further limitations thereof. At least because Morley does not anticipate Appellant's invention as recited in Appellant's independent claim 17, the Appellant respectfully submits that dependent claims 18-20 are also not anticipated and are allowable for at least the reasons stated above with respect to independent claim 17.

Even further, claim 19 recites the further limitation of "adjusting said threshold level where the bandwidth utilization levels of facilities in said first path exceed said first threshold level." The Appellant respectfully submits that there is absolutely no teaching, suggestion or disclosure in Morley for "adjusting said threshold level where the bandwidth utilization levels of facilities in said first path exceed said first threshold level" as taught in the Appellant's Specification and claimed by at least claim 19.

That is, and for at least the same reasons provided in Section A above, Morley fails to teach, suggest or disclose "each one of said plurality of facilities has associated with it a respective bandwidth utilization level, said facilities having bandwidth utilization levels exceeding a first threshold level are not used to define said first circuit path" as taught in the Appellant's Specification and claimed by at least the Appellant's claim 17. Thus, Morley also fails to anticipate Appellant's invention as claimed in dependent claims 18-20, which depend either directly or indirectly from independent claim 17. In addition and as described above, Morley further fails to teach, suggest or disclose "adjusting said threshold level where the bandwidth utilization levels of facilities in said

first path exceed said first threshold level” as specifically claimed by the Appellant’s claim 19. Therefore and for at least the reasons recited above, the Appellant respectfully submits that claims 18-20, as they now stand, fully satisfy the requirements of 35 U.S.C. § 102 and are patentable thereunder.

K. 35 U.S.C. § 102 - Claim 21.

Independent claim 21 is an apparatus claim that recites limitations similar to those recited in independent claims 1, 7, 12 and 17. At least because Morley does not anticipate Appellant’s invention as recited in Appellant’s independent claims 1, 7, 12 and 17, the Appellant respectfully submits that independent method claim 21 is also not anticipated and is allowable for at least the reasons stated in Section A.

More specifically, claim 21 recites “said element manager determining whether said balanced circuit path is balanced by determining whether one of said plurality of facilities for each of said links interconnecting said nodes has associated with it a bandwidth utilization level exceeding a threshold level, and iteratively selecting another facility within any of said links where the bandwidth utilization level of a previously selected facility has exceeded a threshold level.” As such and for at least the reasons provided in Section A, the Appellant submits that Morley fails to anticipate the invention of the Appellant at least with respect to independent claim 21. Therefore, the Appellant submits that claim 21, as it now stands, fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

L. 35 U.S.C. § 102 - Claims 22-23

First, claims 22-23 depend directly from independent claim 21 and recite further limitations thereof. At least because Morley does not anticipate Appellant’s invention as recited in Appellant’s independent claim 21, the Appellant respectfully submits that dependent claims 22-23 are also not anticipated and are allowable for at least the reasons stated above with respect to independent claim 21.

Even further, claim 23 recites the further limitation of “adjusting said threshold level.” The Appellant respectfully submits that there is absolutely no teaching,

suggestion or disclosure in Morley for “adjusting said threshold level” as taught in the Appellant’s Specification and claimed by at least claim 23.

That is, and for at least the same reasons provided in Section A above, Morley fails to teach, suggest or disclose “said element manager determining whether said balanced circuit path is balanced by determining whether one of said plurality of facilities for each of said links interconnecting said nodes has associated with it a bandwidth utilization level exceeding a threshold level, and iteratively selecting another facility within any of said links where the bandwidth utilization level of a previously selected facility has exceeded a threshold level” as taught in the Appellant’s Specification and claimed by at least the Appellant’s claim 21. Thus, Morley also fails to anticipate Appellant’s invention as claimed in dependent claims 22-23, which depend directly from independent claim 21. In addition and as described above, Morley further fails to teach, suggest or disclose “adjusting said threshold level” as specifically claimed by the Appellant’s claim 23. Therefore and for at least the reasons recited above, the Appellant respectfully submits that claims 22-23, as they now stand, fully satisfy the requirements of 35 U.S.C. § 102 and are patentable thereunder.

II. THE EXAMINER ERRED IN REJECTING CLAIMS 4-6 AND 11 UNDER 35 U.S.C. § 103(a) BECAUSE THE CITED REFERENCE FAILS TO TEACH, SHOW OR SUGGEST AT LEAST DETERMINING A FIRST CIRCUIT PATH BETWEEN A SOURCE NODE AND A DESTINATION NODE COMPRISING LINKS, EACH OF THE LINKS COMPRISING AT LEAST ONE FACILITY, WHEREIN FACILITIES HAVING A RESPECTIVE BANDWIDTH UTILIZATION LEVEL ABOVE A FIRST THRESHOLD LEVEL ARE NOT USED TO DEFINE THE FIRST CIRCUIT PATH.

A. 35 U.S.C. § 103 - Claims 4-5.

The Examiner rejected claims 4 and 5 under 35 U.S.C. § 103(a) as being unpatentable over Morley in view of Wan et al. (IEEE, Load Balancing in Counter Rotated Sonet Rings, herein “Wan”). The rejection is respectfully traversed.

Claims 4 and 5 are dependent claims that depend indirectly from the Appellant's claim 1 and directly from the Appellant's claim 2. The Examiner applied Morley to claims 4 and 5 as described above for the Examiner's rejection of the Appellant's claims 1 and 2. The Examiner correctly concedes, however, that regarding claim 4, Morley does not disclose, wherein said first circuit path is a short path, and that regarding claim 5 Morley fails to teach that a second circuit path is a long path. As such, the Examiner cites Wan for teaching short path and long path routing between a source and destination node to achieve optimal load balancing transmissions. The Examiner further alleges that it would have been obvious to modify Morley by specifying that the first path is a short path and that the second path is a long path as per Wan. The Appellant respectfully disagrees.

As described above with regard to the Examiner's rejection of claim 1 and claim 2, the teachings of Morley do not teach suggest, or describe the Appellant's invention with regard to claim 1 or claim 2 with regards to at least "each of said links having associated with it a plurality of facilities, each of said facilities having associated with it a respective bandwidth utilization level, wherein said facilities having bandwidth utilization levels exceeding a first threshold level are not used to define said first circuit path" as taught in the Appellant's Specification and claimed by at least the Appellant's claims 1 and 2. As such, and at least for the reasons set forth above indicating that Morley does not teach suggest, or describe the Appellant's invention with regard to claim 1 and claim 2, the Appellant respectfully submits that dependent claims 4 and 5, which depend indirectly from independent claim 1 and directly from claim 2, are also not rendered obvious by Morley.

Even further, the Appellant submits that the teachings of Wan alone also do not teach the invention of the Appellant at least with regard to claims 1, 2, 4 and 5. Wan teaches several variants of load balancing in counter-rotated directed SONET rings. Specifically, Wan teaches that optimal fractional routing can be obtained by solving a linear program; semi-integral routing can be obtained by solving at most three linear programs; optimal integral routing can be obtained by rounding any optimal parallel semi-integral routing and that optimal unsplit routing is NP-complete. (See Wan, Conclusion)

However, in contrast to the invention of the Appellant, at least with respect to claims 1, 2, 4 and 5, there is absolutely no teaching, suggestion or disclosure in Wan for links comprising a plurality of facilities, or that each of the facilities has a bandwidth utilization level associated with it as described above, or for a threshold level, where the facilities having bandwidth utilization levels exceeding the threshold level are not used to define a circuit path between a source node and a destination node as taught and claimed by at least the Appellant's claim 1. As such, and at least because Wan does not teach, suggest or disclose the Appellant's claim 1, the Appellant further submits that Wan does not teach, suggest or disclose the Appellant's claims 2, 4 and 5, which depend directly and indirectly, respectively, from the Appellant's claim 1.

Furthermore, the Appellant submits that there is no suggestion or motivation to combine the teachings of Morley and Wan.

For prior art reference to be combined to render obvious a subsequent invention under 35 U.S.C. § 103, there must be something in the prior art as a whole which suggests the desirability, and thus the obviousness, of making the combination. Uniroyal v. Rudkin-Wiley, 5 U.S.P.SQ.2d 1434, 1438 (Fed. Cir. 1988). The teachings of the references can be combined only if there is some suggestion or incentive in the prior art to do so. In re Fine, 5 U.S.P.SQ.2d 1596, 1599 (Fed. Cir. 1988). Hindsight is strictly forbidden. It is impermissible to use the claims as a framework to pick and choose among individual references to recreate the claimed invention Id. at 1600; W.L. Gore Associates, Inc., v. Garlock, Inc., 220 U.S.P.Q. 303, 312 (Fed. Cir. 1983).

Moreover, the mere fact that a prior art structure could be modified to produce the claimed invention would not have made the modification obvious unless the prior art suggested the desirability of the modification. In re Fritch, 23 U.S.P.Q.2d 1780, 1783 (Fed. Cir. 1992); In re Gordon, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984).

Moreover, the Appellant submits that even if there was a motivation or suggestion to combine the references (which the Appellant believes that there is none), the teachings of Morley and Wan, either alone or in any allowable combination, fail to teach the invention of the Appellant at least with respect to claim 1. Even further, the Appellant submits that the teachings of Wan fail to bridge the substantial gap between the Appellant's invention, and the teachings of Morley. More specifically, and as

discussed and proven above, Morley fails to teach links comprising a plurality of facilities, or that each of the facilities has a bandwidth utilization level associated with it as described above, or a threshold level, where the facilities having bandwidth utilization levels exceeding the threshold level are not used to define a circuit path between a source node and a destination node as taught and claimed in at least the Appellant's claim 1.

Furthermore, the Appellant submits that the load balancing variant taught in Wan do not bridge the gap between the teachings of Morley and the Appellant's invention at least with respect to the Appellant's claim 1. As such and at least because the teachings of Morley and Wan, alone or in any allowable combination, fail to teach, suggest or disclose the Appellant's claim 1, the Appellant further submits that the teachings of Morley and Wan, alone or in any allowable combination, fail to teach, suggest or disclose the Appellant's invention with respect to claims 4 and 5, which depend indirectly from the Appellant's claim 1. As such, the Appellant respectfully submits that claims 4 and 5 are not rendered obvious by the teachings of Morley and Wan, alone or in any allowable combination, for at least the reasons described above.

Therefore and for at least the reasons recited above, the Appellant respectfully submits that claims 4 and 5, as they now stand, fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

Furthermore, the Appellant would like to point out that the exact publication date of Wan is not properly cited although requested and as such Wan may not be a proper reference to cite as prior art against the Appellant's invention. The Appellant respectfully requests that the exact publication date of the Wan reference be cited and investigated.

B. 35 U.S.C. § 103 - Claims 6 and 11

The Examiner has rejected claims 6 and 11 under 35 U.S.C. § 103(a) as being unpatentable over Morley in view of Budka (U.S. Patent No. 6,014,657). The rejection is respectfully traversed.

Claim 6 is a dependent claim that depends indirectly from the Appellant's claim 1 and directly from the Appellant's claim 3. Claim 11 is a dependent claim that depends

indirectly from the Appellant's claim 7 and directly from the Appellant's claim 10. The Examiner applied Morley to claims 6 and 11 as described above for the Examiner's rejection of the Appellant's claims 1 and 3 and 7 and 10. The Examiner correctly concedes, however, that regarding claims 6 and 11, Morley does not disclose that personnel are notified of a lack of facilities. As such, the Examiner cites Budka for teaching generating an alert that will show that a line is congested and cannot support anymore load. The Examiner further alleges that it would have been obvious to modify Morley by generating an alert that will show that a line is congested and cannot support anymore load as per Budka. The Appellant respectfully disagrees.

As described above with regard to the Examiner's rejection of claims 1 and 3, and claims 7 and 10, the teachings of Morley do not teach suggest, or describe the Appellant's invention with regard to at least claims 1 and 3, and claims 7 and 10. As such, and at least for the reasons set forth above indicating that Morley does not teach suggest, or describe the Appellant's invention with regard to claims 1 and 3, and claims 7 and 10, the Appellant respectfully submits that dependent claims 6 and 11, which depend indirectly from independent claim 1 and directly from claim 2, are also not taught or rendered obvious by Morley.

Even further, the Appellant submits that the teachings of Budka alone also do not teach the invention of the Appellant at least with regard to claims 1, 3, 6, 7, 10 and 11. Budka teaches a technique for balancing a communication load in a communication network where a communication load imbalance is detected, the overburdened channels in the network are labeled congested to deter new-coming terminals from accessing such channels. In addition, messages are sent to selected terminals on the congested channels, commanding them to relocate from such channels to other uncongested channels. (See Budka, Abstract).

However, in contrast to the invention of the Appellant, at least with respect to claims 1, 3, 6, 7, 10 and 11, there is absolutely no teaching, suggestion or disclosure in Budka for links comprising a plurality of facilities, or that each of the facilities has a bandwidth utilization level associated with it as described above, or for a threshold level, where the facilities having bandwidth utilization levels exceeding the threshold level are not used to define a circuit path between a source node and a destination node as

taught and claimed by at least the Appellant's claims 1 and 7. As such, and at least because Budka does not teach, suggest or disclose the Appellant's claims 1 and 7, the Appellant further submits that Budka also does not teach, suggest or disclose the Appellant's claims 3, 6, 10 and 11 which depend directly and indirectly, respectively, from the Appellant's claims 1 and 7.

Furthermore, the Appellant submits that there is no suggestion or motivation to combine the teachings of Morley and Budka.

For prior art reference to be combined to render obvious a subsequent invention under 35 U.S.C. § 103, there must be something in the prior art as a whole which suggests the desirability, and thus the obviousness, of making the combination. Uniroyal v. Rudkin-Wiley, 5 U.S.P.SQ.2d 1434, 1438 (Fed. Cir. 1988). The teachings of the references can be combined only if there is some suggestion or incentive in the prior art to do so. In re Fine, 5 U.S.P.SQ.2d 1596, 1599 (Fed. Cir. 1988). Hindsight is strictly forbidden. It is impermissible to use the claims as a framework to pick and choose among individual references to recreate the claimed invention Id. at 1600; W.L. Gore Associates, Inc., v. Garlock, Inc., 220 U.S.P.Q. 303, 312 (Fed. Cir. 1983).

Moreover, the mere fact that a prior art structure could be modified to produce the claimed invention would not have made the modification obvious unless the prior art suggested the desirability of the modification. In re Fritch, 23 U.S.P.Q.2d 1780, 1783 (Fed. Cir. 1992); In re Gordon, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984).

Moreover, the Appellant submits that even if there was a motivation or suggestion to combine the references (which the Appellant believes that there is none), the teachings of Morley and Budka, either alone or in any allowable combination, fail to teach the invention of the Appellant at least with respect to claims 1 and 7. Even further, the Appellant submits that the teachings of Budka fail to bridge the substantial gap between the Appellant's invention, and the teachings of Morley. More specifically, and as discussed and proven above, Morley fails to teach links comprising a plurality of facilities, or that each of the facilities has a bandwidth utilization level associated with it, or a threshold level, where the facilities having bandwidth utilization levels exceeding the threshold level are not used to define a circuit path between a source node and a destination node as taught and claimed in at least the Appellant's claims 1 and 7.

Furthermore, the Appellant submits that the load balancing taught in Budka does not bridge the gap between the teachings of Morley and the Appellant's invention at least with respect to the Appellant's claims 1 and 7. As such and at least because the teachings of Morley and Budka, alone or in any allowable combination, fail to teach, suggest or disclose the Appellant's claims 1 and 7, the Appellant further submits that the teachings of Morley and Budka, alone or in any allowable combination, also fail to teach, suggest or disclose the Appellant's invention with respect to claims 6 and 11, which depend indirectly from the Appellant's claims 1 and 7. As such, the Appellant respectfully submits that claims 6 and 11 are not rendered obvious by the teachings of Morley and Budka, alone or in any allowable combination, for at least the reasons described above.

Therefore and for at least the reasons recited above, the Appellant respectfully submits that claims 6 and 11, as they now stand, fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

Conclusion

Thus, the Appellant submits that none of the claims presently in the application are anticipated under the provisions of 35 U.S.C. § 102 or obvious under the provision of 35 U.S.C. § 103. Consequently, the Appellant believes all these claims are presently in condition for allowance.

For the reasons advanced above, the Appellant respectfully urges that the rejections of claims 1-3, 7-10, and 12-23 as being unpatentable under 35 U.S.C. §102 and the rejections of claims 4-6 and 11 as being obvious under 35 U.S.C. §103 are improper. Reversal of the rejections in this Appeal is respectfully requested.

Respectfully submitted,

11/19/04
Date

E. J. Wall
Eamon J. Wall, Attorney for the Appellant
Registration No. 39,414
MOSER, PATTERSON & SHERIDAN, L.L.P.
595 Shrewsbury Ave. Suite 100
Shrewsbury, NJ 07702
Telephone: (732) 530-9404
Facsimile: (732) 530-9808

CLAIMS APPENDIX

1. (Previously Presented) A method, comprising the steps of:

determining a first circuit path between a source node and a destination node in a Synchronous Optical Network (SONET) ring comprising a plurality of nodes interconnected by links, each of said links having associated with it a plurality of facilities, each of said facilities having associated with it a respective bandwidth utilization level, wherein said facilities having bandwidth utilization levels exceeding a first threshold level are not used to define said first circuit path.

2. (Previously Presented) The method of claim 1, further comprising the step of:

in a Bi-directional Line Switched Ring (BLSR), selecting a second circuit path in the opposing direction to said first circuit path when facilities in said first circuit path having bandwidth utilization levels below a first threshold level can not be found.

3. (Original) The method of claim 1, further comprising the step of:

adjusting said threshold level where the bandwidth utilization levels of facilities in said second path exceed said first threshold level.

4. (Original) The method of claim 2, wherein said first circuit path is a short path.

5. (Original) The method of claim 2, wherein said second circuit path is a long path.

6. (Original) The method of claim 3, wherein personnel are notified of a lack of facilities.

7. (Original) A method, comprising the steps of:

selecting a path between a source node and a destination node, said path comprising at least two intervening nodes coupled by at least one respective link, where said at least one link has associated with it respective facilities;

selecting one of said facilities within each of said at least one link for placing service on; and

determining whether a respective bandwidth utilization level for each selected facility within said circuit path is below a first threshold level.

8. (Original) The method of claim 7, further comprising the step of:

altering the direction of said circuit path, responsive to a negative determination that within at least one link of said path no facilities exist having respective bandwidth utilization levels below said first threshold level for a Bi-directional Line Switched Ring (BLSR).

9. (Original) The method of claim 8, further comprising the step of:

adjusting the first threshold level of said facilities within said at least one link responsive to a negative determination that said respective bandwidth utilization levels of facilities within an altered direction of said circuit path exceed said first threshold level.

10. (Original) The method of claim 9, further comprising the step of:

repeating said step of adjusting until a facility within said at least one link is found having a bandwidth utilization level that is below said adjusted threshold level.

11. (Original) The method of claim 10, further comprising:

alerting personnel concerning lack of facilities.

12. (Previously Presented) A method, comprising:

(a) selecting a first path between a source node and a destination node, said first path having at least one link;

(b) selecting a facility within each of said at least one link connecting the source node to the destination node;

(c) determining the bandwidth utilization level for each selected facility within each of said at least one link;

(d) rejecting said selected facility in the case of said respective bandwidth utilization level being above a threshold level; and

(e) repeating steps (b) through (d) until a circuit path between said starting node and destination node has been determined which meets said threshold level.

13. (Previously Presented) The method of claim 12, further comprising the step of:

(f) selecting a path in an opposing direction for a Bi-directional Line Switched Ring (BLSR).

14. (Previously Presented) The method of claim 13, further comprising the step of
(g) repeating steps (b) through (e).

15. (Previously Presented) The method of claim 12, further comprising the step of:
(h) adjusting the threshold level incrementally.

16. (Previously Presented) The method of claim 15, further comprising the step of:
(i) repeating steps (a) through (h).

17. (Original) A computer readable medium storing a software program that, when executed by a computer, causes the computer to perform a method comprising the step of:

determining a first circuit path between a source node and a destination node in a Synchronous Optical Network (SONET) ring comprising a plurality of nodes interconnected by links, where each of said links has associated with it a plurality of facilities and each one of said plurality of facilities has associated with it a respective bandwidth utilization level, said facilities having bandwidth utilization levels exceeding a first threshold level are not used to define said first circuit path.

18. (Original) The method of claim 17, further comprising the step of:

selecting a second circuit path in the opposing direction to said first circuit path where facilities having bandwidth utilization levels below a first threshold level in said first path can not be found for a Bi-directional Line Switched Ring (BLSR).

19. (Original) The method of claim 18, further comprising the step of:
adjusting said threshold level where the bandwidth utilization levels of facilities in said first path exceed said first threshold level.
20. (Original) The method of claim 19, further comprising the step of:
repeating said step of determining.
21. (Original) Apparatus, comprising:
an element manager, for determining a balanced circuit path between a source node and a destination node within a Synchronous Optical Network (SONET) ring comprising a plurality of nodes; and
a data base, for storing a respective bandwidth utilization level for each of a plurality of facilities within links interconnecting said nodes;
said element manager determining whether said balanced circuit path is balanced by determining whether one of said plurality of facilities for each of said links interconnecting said nodes has associated with it a bandwidth utilization level exceeding a threshold level, and iteratively selecting another facility within any of said links where the bandwidth utilization level of a previously selected facility has exceeded a threshold level.
22. (Original) The apparatus of claim 21, wherein:
in the case of no facilities within said links being below said utilization level, selecting a balanced path in the opposite direction to said first path direction for a Bi-directional Line Switched Ring (BLSR).
23. (Original) The apparatus of claim 21, wherein:
in the case no bandwidth utilization level of said facilities within said links being below said threshold level in said opposing direction to said first path, adjusting said threshold level.